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UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100346

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CARBOXYLIC ACIDS (I) ACYLATE PHENOL AND GIVE ESTERS WHEN THE REACTION IS PERFORMED AT 110-140DEGREESC (ASEOTROPIC DISTILLATION OF WATER) IN THE PRESENCE OF HCL, 4,CH SUB3 C SUB6 H SUB4 SO SUB3 H, H SUB2 SO SUB4 (II) OR HCLD SUB4 (III); II AND III ARE BETTER CAYALYSTS. RELATIVELY WEAKER CARBOXYLIC ACIDS ARE STRONGER ACYLATION AGENTS. THE GREATER ACIDITY OF ACIDS RESULTS IN SMALLER ACYLATING ABILITY. THE DATA ARE IN ACCORD WITH THE POSTULATED INTERMEDIATE FORMATION OF ACYL CATION.

UNCLASSIFIED

Acc. Nr: **AP 0036881** Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code:

U R 0456

78750a Reaction of p-toluidine with 1,2,3,4-tetrachloroanthraquinone under shock compression. Bokina, E. P.; Deribas, A. A.; Loskutov, V. A.; Mali, V. I. (Inst. Org. Khim., Novosibirsk, USSR). Khim. Vys. Energ. 1970, 4(1), 89-91 (Russ).
A mixt. of 1,2,3,4-tetrachloroanthraquinone (I) and p-MeC₆H₄NH₂ (II) was subjected to 200 kbar pressure in a steel container to give the following results (amts. I and II before, and amts. I, 1-(phenylamino)-2,3,4-trichloroanthraquinone (III), and 2-(phenylamino)-1,3,4-trichloroanthraquinone (IV) after reaction in g given): 1.04, 0.31, 0.55, 0.48, 0.024; 1.04, 1.55, 0.84, 0.12, —; 1.04, 6.2, 1.00, —, —. Heating 1.04 g I and 0.62 g II in 40 ml Me₂SO 70 hr at 80° gave 0.9 g III and 0.13 g IV. J. Panchartek

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REEL/FRAME
19721801

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Acc. Nr.

AP0041535

Abstracting Service:

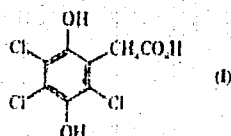
CHEMICAL ABST.

4/70

Ref. Code

UR 0366

89978g N,N-Dialkylaminovinylquinones. I. Transformation of 2-[2-(dimethylamino)vinyl]-3,5,6-trichlorobenzoquinone into 2-carboxymethyl-3,5,6-trichlorohydroquinone under the influence of hydrochloric acid. Fokin, E. P.; Prudchenko, E. P. (Novosibirsk. Inst. Org. Khim., Novosibirsk, USSR). *Zh. Org. Khim.* 1970, 6(1), 91-3 (Russ.). Heating 2-[2-(dimethylamino)vinyl]-3,5,6-trichlorobenzoquinone in cond. HCl soln. gave 2-carboxymethyl-3,5,6-trichlorohydroquinone (I) instead of the expected 3,5,6-trichlorobenzoquinone-2-acetaldehyde (Dzh. Shmushkovich, 1966). The esterification of I with MeOH satd. with HCl gave its Me ester. The oxidn. of I with FeCl₃ gave



3,5,6-trichlorobenzoquinone-2-acetic acid, which was converted to the Me ester. Heating I above the m.p. (~210°) gave 4,6,7-trichloro-5-hydroxycoumarone which was acetylated to its 5-acetoxy analog.

CPJR

REEL/FRAME
19751403

FOKIN, I. I.

MEDICINE

J-1137

SO: Military Medical
JOURNAL #16
OCT 98 Moscow
111

SCIENTIFIC CONFERENCE OF MILITARY SANATORIUM PHYSICIANS

(I. I. Fokin and G. N. Arat'yev)

A scientific conference of physicians from Pyatigorsk and Yessentuki sanatoriums of the USSR Ministry of Defense convened in Pyatigorsk in April 1970, and was dedicated to the 100th anniversary of the birthday of V. I. Lenin. Among its participants were medical service lieutenant general N. S. Holodnyy, chief therapist of the USSR Ministry of Defense, and physicians from the Kislovodsk sanatorium of the Ministry of Defense and from the Pyatigorsk resort council. Issues pertaining to sanatorium and resort therapy for patients suffering from pathology of the digestive, endocrine and cardiovascular systems were discussed.

In his opening remarks, medical service colonel I. N. Pavlik remarked that the team of Pyatigorsk Sanatorium, for their achievement in the socialist competition, in therapeutic and diagnostic and administrative work, were awarded in 1969, the title of Team of Communist Labor, and the sanatorium has been entered on the regional honor roll.

Medical service colonel K. A. Gavrilov delivered a paper on "V. I. Lenin and Soviet Health Care."

Lieutenant general of the medical service N. S. Holodnyy told about the principles in evaluating the results of studies of acid producing function of the stomach using radiotelemetry, and gave several recommendations for better organization of patient treatment at balneological resorts.

Medical service colonel G. N. Arat'yev reported the results of a study of dynamic of gastric peristalsis using electrogastrography on patients suffering from chronic gastritis during treatment with the mineral waters of Yessentuki No 17 and No 3. It was established that both after single ingestion of mineral water and after a whole course of therapy more than half the patients showed a change in their electrogastrograms in the direction of normalization. Electrocardiography in conjunction with other examination methods helps in making an objective evaluation of the effectiveness of sanatorium and resort therapy for patients with chronic gastritis.

Medical service colonel I. I. Fokin, medical service major I. N. Mel'nik, Ye. G. Savko, L. N. Piskunov, and P. T. Gerasimov in a paper entitled "Pancreatic and Complex Sanatorium Therapy for Patients with Chronic Pancreatitis," summarized the findings from a study of external and internal secretion of the pancreas, described the method of palpating the pancreas according to Grotz, and reported on an exhaustive study of the pain syndrome. They made extensive use of quantitative assays of enzymes in the duodenal contents with concurrent studies of diastase and glycemic curves with a double glucose load. Differentiated complex sanatorium treatment was prescribed in accordance with examination results. It included medical protective regimen, diet, ingestion of mineral water, mineral baths, mud treatment, diadynamotherapy, intestinal procedures and, in some cases, drug therapy. Observations revealed that in order to prevent exacerbation of chronic pancreatitis mineral baths should be prescribed at a temperature of no higher

USSR

BREGMAN, L. M., FOKIN, I. N.

"The Sums of Matrix Games"

Mat. Apparat. Planov. Raschestov. [Mathematical Apparatus of Plan Calculations -- Collection of Works], Moscow, 1972, pp 73-83 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V671 by the authors).

Translation: A definition is presented for the sum of matrix games and the structure of optimal strategies in such games is studied. A necessary and sufficient condition is presented for a set of pure strategies of a player in the sum of a matrix game to be complete. In this case the game-sum of the player includes an optimal strategy allowing representation of a special form. Examples of the sums of matrix games are studied in which the sets of pure strategies of the players are complete.

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USSR

FOKIN, I. N.

"Some Games Problems of Distribution of Resources"

Teoriya Igr [Games Theory -- Collection of Works], Yerevan, 1973,
pp 331-336 (Translated from Referativnyy Zhurnal Kibernetika, No 10,
1973, Abstract No 10V443)

Translation: The problem of distribution of resources is looked upon
as an antagonistic game with multidimensional space of strategies.
This work is dedicated to methods of determination of the value of a
game and optimal strategies for certain such games. Resume

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I. Decision-making, Game Theory and
Optimal Programming

USSR

BREGMAN. L. M.. FOKIN. I. N.

"The Sums of Matrix Games"

Ekonomika i Mat. Metody [Economics and Mathematical Methods], 1973, Vol 9,
No 1, pp 148-154 (Translated from Referativnyy Zhurnal Kibernetika, No 6,
1973, Abstract No 6V482, by the authors).

Translation: The structure of optimal strategies in sums of matrix games is studied (see also RZhMat, 1970, 4V426). A necessary and sufficient condition is presented, assuring that in game Γ , the sum of matrix games $\Gamma_1, \Gamma_2, \dots, \Gamma_n$ with fixed set I of pure strategies of player I, with any $m_v \times n_v$ matrices A_v in games Γ_v ($v = 1, \dots, n$) and with any set of pure strategies of player II, there is an optimal strategy $x = \{x_i | i \in I\}$ of player I, number α and mixed strategies $x^v = (x_1^v, \dots, x_{m_v}^v)$ of the first player in games Γ_v such that the representation

$$x_i = \alpha \prod_{v=1}^n x_{i_v}^v$$

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Bregman, L. M., Fokin, I. N., Ekonomika i Mat. Metody, 1973, Vol 9, No 1, pp 148-154.

obtains for all pure strategies $i = (i_1, \dots, i_n)$ of player I. Examples of sums of matrix games are studied, in which this condition is easily tested.

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Acc. Nr:

AP0040015

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code:

UR 0096

F

71398h Self-consistent tables and diagrams of the thermodynamic properties of substances. Fokin, L. R. (Mosk. Energ. Inst., Moscow, USSR). *Teplotekhnika* 1970, 17(1), 52-5 (Russ). Thermodynamic tables of most substances, even those of water and steam, are not self-consistent, insofar as the properties of the vapor and liq. and the satn. pressures are calcd. independently. Self-consistency criteria are presented and the method for insuring self-consistency. An example is worked out for the Hg system.

M. Shelif

REEL/FRAME

19741423

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USSR

UDC 620.193.41 : 669.24

MATUSEVICH, V. S., LEBEDEV, A. N., FOKIN, M. N., and KONSTANTINOVA, YE. V.

"Study of Corrosion of Nickel-Molybdenum Alloy EP-496 in Hydrochloric Acid Solutions Containing a Fluorine Ion"

Moscow, Zashchita Metallov, Vol 8, No 3, May-Jun 72, pp 317-320

Abstract: For purposes of selecting a corrosion-resistant material for highly corrosive media of the system $\text{HCl}+\text{HF}+\text{H}_2\text{O}$, the authors tested nickel-molybdenum alloy EP-496 ($\text{C} < 0.05$, $\text{Si} < 0.5$, $\text{Mn} < 0.5$, $\text{V} 1.4-1.7$, $\text{Fe} < 4.0$, $\text{Mo} 25\pm 29$ percent, the rest Ni), developed by the Central Scientific Research Institute of Ferrous Metallurgy. The tests were conducted in a 10 M HCl solution with additions of 0.2-1.0 M F^- at the boiling point (104°C). Alloy EP-496 possesses satisfactory corrosion resistance in a hydrochloric acid solution with fluoride additions. The corrosion rate and potential change slightly with the introduction of up to 1.0 M fluoride ion into the solution. The alloy corrodes at an increased rate if there are oxidizing agents in the solution. The corrosion potential of EP-496 in a 10 M $\text{HCl}+0.2$ M F^- solution shifts towards

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MATUSEVICH, V. S., et al., Zashchita Metallov, Vol 8, No 3, May-Jun 72, pp 317-320

positive values and the average corrosion rate rises sharply with an increase in the Fe^{3+} concentration. For purposes of corrosion protection, the authors tried a method of Fe^{3+} reduction in solution and selected the most effective reducing agents. This treatment was found to be more effective with a homogeneous oxidation mechanism than with heterogeneous oxidation. The problem was to select a reagent which permits sufficiently rapid and complete reduction of Fe^{3+} with minimum consumption of the introduced reducing agent.

Sodium hyposulfite and hypophosphite proved ineffective. The introduction of tin dichloride provides effective protection, reducing the corrosion rate to that in a solution free of an oxidizing agent. In experiments with metallic reducing agents, their protector effect on the alloy was eliminated (the experiments being staged in the absence of direct contact between specimen and the chip of the introduced metal). There was an increase in the

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MATUSEVICH, V. S., et al., Zashchita Metallov, Vol 8, No 3, May-Jun 72, pp 317-320

corrosion rate of the alloy with the introduction of a metal chip (steel St. 3) into the solution. The transition of metallic iron to the ionic state was accompanied by intensive hydrogen evolution. Metallic aluminum cuts in half the corrosion rate of the alloy. Metallic titanium was found to be an exceptionally effective corrosion inhibitor for alloy EP-496 in a hydrochloric acid-fluoride medium both in the presence and in the absence of trivalent iron ions in the solution. The optimum addition of metallic titanium for protection at certain oxidizing agent concentrations is chosen empirically.

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USSR

UDC 620.195

SOLOV'YEVA, ZH. F., FOKIN, M. N., and TIMONIN, V. A., Moscow Institute of Steels and Alloys

"Criteria for the Tendency of Titanium Alloys to Crevice Corrosion"

Moscow, Zashchita Metallov, Vol 6, No 2, Mar-Apr 1970, pp 204-206

Abstract: In neutral and weakly acid chloride-containing solutions passive titanium may become activated in crevices, which minimizes its value as an all-purpose constructional material for use in chloride media. According to current views, crevice corrosion occurs under conditions promoting the disturbance of the passive state of titanium. The possibility of complete passivation of a crevice under conditions when the metal's surface outside the crevice is passive, considerably depends on its geometric characteristics. This study assesses the applicability of concepts on passivation of extended electrodes for predicting crevice corrosion. The VTZ-1 titanium alloy involved in the experiment (Al-4.0 to 6.2; Cr-1.5 to 2.5; Mo-1.0 to 3.0; Fe-0.8; Si-0.4; and C-0.1%) was studied in a 3% NaCl solution acidified with HCl to various pH values. At the selected temperature 98°C, the incubation period of crevice corrosion caused by the action of air-oxidized films on the surface of titanium was much shorter than at regular temperature. The potentiostatic curves of the VTZ-1 alloy given in the article show

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SOLOV'YEVA, ZH. F., et al., Zashchita Metallov, Vol 6, No 2, Mar-Apr 1970, pp 204-206

that the active anodic dissolution loop indicating the possible activation of the metal appears at pH less than 0.5. In solutions of lower acidity, titanium remains passive. A diagram of the experimental model is given in the article. Upon analyzing the effect of alloying components of the metal on its tendency to crevice corrosion, it must be noted that all elements reducing the critical current density of passivation or narrowing the region of potentials of anodic active dissolution facilitate metal passivation in the crevice.

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1/2 029 UNCLASSIFIED PROCESSING DATE--090C170
TITLE--CRITERIA OF THE PITTING CORROSION TENDENCY OF TITANIUM ALLOYS -U-
AUTHOR--(03)-SULOVEVA, ZH.F., FOKIN, M.N., TIMONIN, V.A.
COUNTRY OF INFO--USSR
SOURCE--ZASHCH. METAL. 1970, 6(2), 204-6
DATE PUBLISHED--70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--TITANIUM ALLOY, CURRENT DENSITY, CORROSION RATE, AQUEOUS
SOLUTION, SODIUM CHLORIDE, ALUMINUM ALLOY, CHROMIUM ALLOY, MOLYBDENUM
ALLOY, SILICON ALLOY, HYDROCHLORIC ACID, METAL SURFACE PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1796 STEP NO--UR/0365/70/006/002/0204/0206
CIRC ACCESSION NO--AP0112782
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112782

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CREVICE CORROSION WAS STUDIED ON A TI ALLOY CONTG. AL 4.0-6.2, CR 1.5-2.5, MO 1.0-3.0, FE 0.8, SI 0.4, C 0.1PERCENT, AND THE REST TI; THE STUDIES WERE MADE IN A 3PERCENT NaCl SOLN. IN WHICH THE PH WAS SUITABLY ADJUSTED BY ADDN. OF HCL. AT 98DEGREES ACTIVATION OF THE METAL APPEARED AT PH IS SMALLER THAN 0.5. IN LESS ACID SOLNS., THE TI ALLOY WAS PASSIVE. INSIDE A CREVICE WHERE THE VOL. OF ANOLYTE PER UNIT AREA IS VERY SMALL, THE ACIDIFICATION OF THE ANOLYTE CAUSED BY THE HYDROLYSIS OF CORROSION PRODUCTS PROCEEDS RAPIDLY. THE SURFACE OF THE METAL OUTSIDE THE CREVICE IN CONTACT WITH THE SOLN. GREATLY EXCEEDS THE SURFACE INSIDE THE CREVICE, THUS A POTENTIOSTAT OF CONSIDERABLE STRENGTH IS ESTABLISHED. THE PASSIVATION OF THE INSIDE CREVICE SURFACE WAS STUDIED. BY MEANS OF DERIVED EXPRESSIONS, THE CORROSION BEHAVIOR OF THE METAL WITHIN THE CREVICES CAN BE PREDICTED BY KNOWING THE GEOMETRY AND THE ELECTROCHEM. CONSTS. THE DECISIVE FACTOR IN THIS CASE IS THE POTENTIAL OF THE METAL OUTSIDE THE CREVICE. ALLOYING ELEMENTS WHICH REDUCE THE CRITICAL C.D. OF PASSIVATION OR WHICH NARROW DOWN THE RANGE OF POTENTIAL AT WHICH ANODIC DISSOLN. OCCURS CONTRIBUTE TO THE PASSIVATION OF THE METAL WITHIN THE CREVICE. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.314.58 (088.6)

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FCKIN, V.A., ANAN'YEV, K.YA., FCKIN, O.A. [Zaporozhsk. mashinostroit. in-t im.
V. Ya. Chubarya--Zaporzhskiy Machine Construction Institute imeni V. Ya. Chubarya]

USSR Author's Certificate No 251671, Filed 16 Apr 68, Published 25 Feb 70 (From
RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10348P)

Translation: The invention pertains to a static frequency multiplier based on semi-conductor diodes and capacitors which comprises two bridges. With the object of increasing the energy indices, it is proposed to use an inverter based on thyristors, the input of which is connected to the anodes of the semiconductor diodes (with a common anode) of one bridge and to the cathodes of the semiconductor diodes (with a common cathode) of the other bridge, during which one part of the load is connected via capacitors to the outputs of the bridges and the other to the output of the inverter. 1 ill. I.R.

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UDC 621.314.58 (088.8,

FOKIN, V.A., ANAN'YEV, K.YA., FOKIN, O.A. [Zaporozhsk. mashinostroit. in-t im. V. Ya. Chubarya--Zaporzheskiy Machine Construction Institute imeni V. Ya. Chubarya]

USSR Author's Certificate No 251671, Filed 16 Apr 68, Published 25 Feb 70 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10B34SP)

Translation: The invention pertains to a static frequency multiplier based on semiconductor diodes and capacitors which comprises two bridges. With the object of increasing the energy indices, it is proposed to use an inverter based on thyristors, the input of which is connected to the anodes of the semiconductor diodes (with a common anode) of one bridge and to the cathodes of the semiconductor diodes (with a common cathode) of the other bridge, during which one part of the load is connected via capacitors to the outputs of the bridges and the other to the output of the inverter. 1 ill. I.R.

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Converters

USSR

UDC 621.314.58(088.8)

FOKIN, V. A. /Zaporozh. mashinostroitel'noy in-t--Zaporozhskiy Machine Construction Institute/

"Frequency Converter With Direct Coupling"

USSR Author's Certificate No 256046, filed 16 July 1968, published 23 March 1970 (from RZh-Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B582P)

Translation: The frequency converter is made in the form of three groups, each consisting of two 3-phase transformers and two 3-phase modulators. The primary windings of the transformers of each group are connected in series, and the secondary windings in anti-series. The modulator is a 3-phase rectifier /vypryamitel' bridge, the output of which is connected to a thyristorized commutator. It is proposed, with the object of reducing the voltage at the modulator, to employ additional windings on the transformers, one terminal of which are connected to the common junctions of the primary windings and the other (center and end) terminals are connected to the inputs of the modulators.

2 illustrations. A.S.

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USSR

UDC 539.214:539.374

FOKIN, V. G.

"A Determination of the Residual Tangential Stress in Multiple Plates"

Kuybyshev, Tr. Kuybyshev. aviats. in-t (Transactions of the Kuybyshev Aviation Institute), Vyp 63, 1972, pp 9-15 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V597)

Translation: By means of a solution of the special Michell problem it is demonstrated that internal tangential stresses cause twisting of a strip when it is cut out of a plate and a portion of the material is removed. It is proposed to use the relationship obtained between the angle of twisting and the internal stress for determining the residual tangential stress by the band method. (Author's abstract)

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Stress Analysis and Stability Studies

USSR

FOKIN, V. G., IVANOV, S. I.

"Method of Strips for Investigation of Residual Stresses in Multilayer Plates"

Tr. Kuybyshev. Aviats. In-t. [Works of Kuybyshev Aviation Institute], No 53, 1971, pp 16-32, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V519 by O. F. Chernyavskiy).

Translation: A multilayer plate is studied, composed of materials with various elastic properties, in the case when the residual stresses change only through the thickness of the plate. In order to determine the normal and tangential stresses directed parallel to the surface of the plate, strips are cut from the plate, in which layers are then removed with measurement of the bending and twisting angle. Relationships are produced allowing the results of measurement to be used to calculate the normal and tangential residual stresses. The results of the investigation of two strips cut in mutually perpendicular directions are used to determine the normal residual stresses. One broad strip (with width to height ratio at least five) or three narrow strips are used to determine tangential stresses.

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USSR

UDC 621.01

FOKIN, V. O., Graduate Student

"Determination of the Principal Dimensions of a Compound-Chain Mechanism With Minimum Divergence of Drive Angles From Ninety Degrees"

Moscow, IVUZ, Mashinostroyeniye, No 1, 1971, pp 87-91

Abstract: The paper is devoted to practical solution of the problem of synthesizing a compound chain mechanism from three positions of its three working sections. In addition to performance according to a predetermined law of motion, the mechanism satisfies the condition of drive angles with minimum deviation from 90° for the entire range of deviation of the working sections. The equations used in the work were derived in a previous article (Синтез многозвенного механизма с углами передачи, наименее отклоняющимися от девяноста градусов, IVUZ, Mashinostroyeniye, No 11, 1970).

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1/2 008 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--DISIGNING OF A HINGED FOUR ELEMENT MECHANISM WITH RESPECT TO
TRANSMISSION RELATIONS WITH ALLOWANCE FOR TRANSMISSION ANGLE -U-
AUTHOR--FOKIN, V.O.
COUNTRY OF INFO--USSR *F*
SOURCE--MASHINOSTROENIE, NO 2, 1970, P. 61-66
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--MECHANICAL LINKAGE, MECHANICAL ENGINEERING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1985/0316 STEP NO--UR/0418/70/000/002/0061/0066
CIRC ACCESSION NO--AP0100803
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100803

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLUTION OF THE DYNAMIC SYNTHESIS OF A HINGED, FOUR ELEMENT MECHANISM WITH RESPECT TO THREE POSITION OF THE DRIVEN LINK AND THREE TRANSMISSION RELATIONS AT THESE POSITIONS. THE POSITION OF THE DRIVEN ELEMENT IS ARBITRARILY SELECTED WHILE ITS INITIAL POSITION IS SELECTED WITH ALLOWANCE FOR THE TRANSMISSION ANGLE. A NUMERICAL EXAMPLE ILLUSTRATING THE METHOD USED IS PRESENTED.

UNCLASSIFIED

USSR

UDC 669.140

CHELYSHEVA, A. A. (Aspirant), PROKOSHIN, D. A. (Doctor of Technical Sciences, Professor), RAKHSHTADT, A. G. (Doctor of Technical Sciences, Professor), FOMIN, V. V. (Doctor of Technical Sciences), GUREVICH, YA. B. (Candidate of Technical Sciences), MILYAKOV, A. P. (Engineer), and MARININ, A. A. (Candidate of Technical Sciences), Moscow Higher Technical School imeni N. E. Bauman

"Study of Hydroerosion Resistance of High Strength Chromium-Manganese-Silicon Steels"

Moscow, IVUZ Mashinostroyeniye, No 1, Jan 70, pp 117-122

Abstract: The article presents the study of properties of steels 40Kh3G6S and 50Kh3G6S after heat and heat-mechanical treatment. It is shown that the steels, after ordinary hardening, high-temperature heat-mechanical treatment (VTMO) and low-temperature heat-mechanical treatment (NTMO) plus low-temperature tempering possess a reduced value of yield point at high value of tensile strength. The low yield point is explained by the presence of a considerable quantity of residual austenite. In the process of deformation during determination of the tensile strength the residual austenite apparently is transformed into martensite and therefore the tensile strength reaches high values. The use of sub-zero treatment, which induces the transformation

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CHELYSHEVA, A. A., et al., IVUZ Mashinostroyeniye, No 1, Jan 70, pp 117-122

of residual austenite into martensite, considerably increases the yield point from 67 kg/mm^2 to 140 kg/mm^2 after hardening in steel 40Kh3G6S with a small increase in the tensile strength. The comparison of mechanical properties of studied steels after hardening, VTMO, NTMO and low temperature tempering at equal quantity of residual austenite shows that heat-mechanical treatment, particularly NTMO, increases the strength properties of steels. Hydroerosion tests show that steels 40Kh3G6S and 50Kh3G6S possess a considerably high resistivity to jet-impact erosion. At that, the difference between resistance after hardening and low temperature tempering and hardening, sub-zero treatment and low temperature tempering is insignificant regardless of the fact that in the latter case the quantity of martensite is much higher. It is shown that the deformation of steels 40Kh3G6S and 50Kh3G6S under VTMO and particularly under NTMO increases the quantity of residual austenite as compared to ordinary hardening. This is due to lowered transformability of supercooled and deformed austenite into martensite. Likewise, the resistance to jet-impact erosion of these steels significantly increased after VTMO but particularly after NTMO, as compared to ordinary hardening and tempering. This increase in the resistance to hydroerosion due to VTMO and NTMO is traced to high degree of work hardening of austenite obtained as a result of deformation during VTMO and NTMO and to its partial transformation into martensite.

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USSR

UDC 547.673.2

FOKIN, Ye. P., LOSKUTOV, V. A., Institute of Organic Chemistry, Novosibirsk, Siberian Department, Academy of Sciences USSR

"Interaction of Polyhalogenoanthraquinones with Nucleophiles. IV. Reactions of 1,2- and 1,3-dihalogenoanthraquinones with Piperidine in Benzene and Dimethyl Sulfoxide"

Novosibirsk, Izvestiya Sib Otdel Akad Nauk SSSR, Seriya Khim Nauk, No 2, Vol 1, pp 100-103

Abstract: The interaction of 1,2- and 1,3-dihalogenoanthraquinones with piperidine in benzene and dimethyl sulfoxide was studied. The dependence of the point of introduction of the piperidine group on the solvent was established. Thus, 1,2- and 1,3-dichloro (or difluoro) anthraquinones with piperidine in benzene form only 1-piperidino-2(3)-chloro (fluoro) anthraquinones, and 1-chloro-2-fluoro anthraquinone produces a mixture of 1-piperidino-2-fluoro- and 1-chloro-2-piperidino anthraquinones in a ratio of about 1:1. In dimethyl sulfoxide, 1,2- and 1,3-dihalogenoanthraquinones with piperidine form mixtures of α - and β -piperidino halogenoanthraquinones, while 1-chloro-2-fluoroanthraquinone yields only 1-chloro-2-piperidino anthraquinone.

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1/2 019 UNCLASSIFIED PROCESSING DATE- 090C770
TITLE--PHOTOCHEMICAL REARRANGEMENT OF DIALKYLAMINO CHLORO QUINONES INTO
BENZ (2, 1 D), 2, 3, OXAZOLINE DERIVATIVES -U-
AUTHOR-(02)-YUDDVIRSHIS, A.M., FOKIN, YE.P.
COUNTRY OF INFO--USSR
SOURCE--IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR, NO 4, SERIYA
KHIMICHESKIKH NAUK, 1970, NR 2, PP 124-128
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PHOTOEFFECT, AMINO, CHLORINATED ORGANIC COMPOUND, QUINONE,
CHEMICAL DECOMPOSITION, FORMALDEHYDE, DEALKYLATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PRUXY REEL/FRAE--1992/1876 STEP NO--UR/0289/70/000/000/0124/0123
CIRC ACCESSION NO--AP0112856
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0112856

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IRRADIATION OF
3,5,6,TRICHLORO,2,DIMETHYLAMINO,1,4,BENZOQUINONE,
3,6,DICHLORO,2,5,BIS(DIMETHYLAMINO),1,4,BENZOQUINONE AND
3,6,DICHLORO,2,METHYLAMINO,5, DIMETHYLAMINO,1,4,BENZOQUINONE IN
SOLUTIONS WITH VISIBLE LIGHT GIVES THE UNSTABLE DERIVATIVES OF
BENZOXAZOLINE, THAT DECOMPOSE INTO THE DEALKYLATION COMPOUNDS OF THE
PARENT CHLORO, DIMETHYLAMINO, QUINONES AND FORMALDEHYDE.
FACILITY: NOVOSIBIRSK INSTITUT ORGANICHESKOY KHMII SO AN SSSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--09JCT70
TITLE--REACTIONS OF POLYHALOGENANTHRAQUINONES WITH NUCLEOPHILES VII.
REACTION OF 1, 2, 3, 4, TETRAFLUOROANTHRAQUINONE WITH DIETHYL, DIBUTYL,
AUTHOR--(03)-LOSKUTOV, V.A., NEKRASOVA, L.N., FOKIN, YE.P.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSR, NO 4, SERIYA
KHIMICHESKIKH NAUK, 1970, NR 2, PP 119-124
DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FLUORINATED ORGANIC COMPOUND, ANTHRAQUINONE, ALIPHATIC AMINE,
AROMATIC AMINE, CHEMICAL REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1868

STEP NO--UR/0289/70/000/000/0119/0124

CIRC ACCESSION NO--AP0112848

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--090CT70

2/2 018

CIRC ACCESSION NO--AP0112848

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 1, 2, 3, 4, TETRAFLUOROANTHRAQUINONE REACTS WITH DIETHYL, DIBUTYL, DIISOBUTYL, AND DIBENZYLAMINES IN BENZENE TO GIVE THE CORRESPONDING 1, (N, DIALKYLAMINO), 2, 3, 4, TRIFLUOROANTHRAQUINONES WITH YIELD 70-80 PERCENT. IN DIMETHYL SULFOXIDE DIETHYL AND DIBUTYLAMINES FORM WITH 1, 2, 3, 4, TETRAFLUOROANTHRAQUINONE 2, (N, DIALKYLAMINO), 1, 2, 3, 4, TRIFLUOROANTHRAQUINONES AND DIISOBUTYL AND DIBENZYLAMINES, THE CORRESPONDING 1, ISOMERS. THE FUNDAMENTAL PRODUCT OF THE REACTION OF 1, DIETHYL (DIBUTYL, DIISOBUTYL) AMINO, 2, 3, 4, TRIFLUOROANTHRAQUINONES WITH DIETHYL DIBUTYL, DIISOBUTYLAMINES IS 1, 4, BIS (N, DIALKYLAMINO), 2, 3, DIFLUOROANTHRAQUINONES BOTH IN BENZENE AND DIMETHYL SULFOXIDE. FACILITY: NOVOSIBIRSK INSTITUT ORGANICHESKOY KHIMII SO AN SSSR.

UNCLASSIFIED

USSR

UDC 632.95

FOKIN, YE. P., and PRUDCHENKO, YE. P.

"Method of Producing 3,6-Dioxy-2,4,5-trichlorophenylacetic Acid"

USSR Authors' Certificate 250991, filed 21/09/68, published 20/01/70, (from Referativnyy Zhurnal Khimii, No 16 (II), 25 Aug 70, Abstract No 16 N740 by I. A. Mel'nikov)

Translation: 3,6-dioxy-2,4,5-trichlorophenylacetic acid (I), an active herbicide, is produced from 2-(N-dimethylaminovinyl)-3,5,6-trichlorobenzoquinone (II) by treating it with concentrated HCl (acid). 2 g I in 140 ml concentrated HCl is boiled 30-40 min, the solution is filtered, separating 1.5 g I from the mother liquor with cooling, yield 75%, m.p. 207-8° (from water). By boiling 1 g I in MeOH, saturated with dry HCl (gas), 0.8 g ME I is produced, yield 72%, m.p. 123-4° (from CCl₄); by heating 1 g I at 205-210°, 0.9 g /-lactone I (III) is produced, yield 96%, m.p. 234-5° (from alcohol); by treating 0.5 g III with Ac₂O, 0.52 g III acetate is produced, yield 89%, m.p. 203-4° (from CHCl₃). Oxidation of 1 g I using FeCl₃ synthesizes 0.8 g 2,4,5-trichloro-3,6-quinonylacetic acid (IV), yield 81%, m.p. 168-71°, ME IV is produced in a method similar to that described above, yield 40%.

1/1

Acc. Nr.: AM 0045248

Ref. Code: VR0000

Eokin. Yu. G.

Reliability in Operation of Technical Equipment (Nadezhnost' pri ekspluatatsii tekhnicheskikh sredstv) Moscow, Voenizdat, 1970, 223 pp (SL:1846)

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Reel/Frame

19780163

AM0045248

The book is based on open Soviet and foreign data...
It was written for officers as well as trained soldiers and sergeants...

LD

19780164

USSR

UDC 612.822-06:612.118.24-06:616.895.87-085.1

FOKINA, A. V., and FAYVISHEVSKIY, V. A., Institute of Psychiatry, Academy of Medical Sciences, USSR, Moscow

"On the Question of the Specificity and Site of Action of the Blood Serum of Schizophrenics on the Brain of Experimental Animals"

Moscow, Zhurnal Nevropatologii i Psikhiatrii imeni S. S. Korsakov, Vol 73, Vyp 8, 1973, pp 1228-1232

Abstract: The changes in the primary response of the visual region of the cerebral cortex to light flashes in cats into whose brains the serum of psychotic patients had been introduced was studied. The serum of nuclear schizophrenic patients caused a sharp rise in the amplitude of the negative phase of the primary response, in contrast to that of normal people, or those with Picks disease, which caused a decrease, and that of epileptics, which caused no change. The nonhomogeneity of the epileptic group, as indicated by a larger variation of results, is said to explain the latter finding, with the presence of an antagonist to the normal activity also suggested. The presence of electrodes in the posterior hypothalamus and the brain stem appeared to inhibit the action of the abnormal metabolites in the schizophrenics' serum.

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1/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--MULTIPLICATION OF COXSACKIE GROUP A VIRUSES IN HUMAN EMBRYO LUNG
DIPLCID CELLS -U-
AUTHOR--(03)-FGKINA, G.I., ZUBOVA, Z.F., RAPOPORT, R.I.
COUNTRY OF INFO--USSR
SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 346-350
DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--COXSACKIE VIRUS, LUNG, TISSUE CULTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/0582

STEP NO--UR/0402/70/000/003/0346/0350

CIRC ACCESSION NO--AP0126321

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126321

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PATTERN OF MULTIPLICATION AND THE DYNAMICS OF ACCUMULATION IN CELLS AND CULTURE FLUID OF COXSACKIE GROUP A VIRUSES (TYPES 13, 18, 20, 21) WERE STUDIED IN HUMAN EMBRYO LUNG DIPLOID CELLS. THE DYNAMICS OF ACCUMULATION OF DIFFERENT TYPES OF COXSACKIE A VIRUSES WAS FOUND TO BE NO DIFFERENT. THE INCREASE OF VIRUS IN CELLS AND THE CULTURE FLUID WAS PARALLEL UP TO THE MOMENT OF DEGENERATION OF OVER 50PERCENT OF CELLS AFTER WHICH TIME THE TITER OF THE CELLULAR VIRUS DROPPED AND THAT OF THE CULTURE FLUID PERSISTED. THE LATTER APPEARED TO BE DUE TO TRANSITION OF INTRACELLULAR VIRUS INTO THE MEDIUM WHEN THE MAJORITY OF THE CELLS WERE DESTROYED. THE TIME OF MAXIMUM INCREASE OF VIRUS IN CELLS AND THE TIME OF DEGENERATION WERE INVERSELY RELATED TO THE SIZE OF THE INFECTING DOSE AND DID NOT DEPEND UPON THE VIRUS TYPE. COXSACKIE A 21 VIRUS, KUYKENDALL STRAIN AT A HIGH MULTIPLICITY OF INFECTION WAS FOUND TO PENETRATE INTO THE CELL IN 15 MIN. BUT COULD NOT BE DETECTED IN 2 HOURS. NEWLY SYNTHESIZED VIRUS APPEARED IN THE CELLS IN 3-4 HOURS. THE VIRUS REACHED MAXIMUM TITER IN THE CELLS 8 HOURS AFTER INOCULATION, AND IN THE CULTURE FLUID 3 HOURS LATER. BY 11 HOURS AFTER INOCULATION THE TOTAL AMOUNT OF VIRUS REACHED MAXIMUM TITER. THE AMOUNT OF INTRACELLULAR VIRUS THROUGHOUT THE OBSERVATION PERIOD EXCEEDED THAT IN THE CULTURE FLUID. FACILITY: MOSKOVSKIY NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT VIRUSNYKH PREPARATOV.

UNCLASSIFIED

USSR

UDC: 546.32/34-51'882-31:537.228.1

CHKALOVA, V. V., BONDARENKO, V. S., STEMBER, N. G., STRIZHEVSKAYA, F. N.,
FOKINA, G. O.

"Solid Solutions Based on Alkali Metal Niobates"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 6, Jun 73,
pp 987-991.

Abstract: The study of solid solutions based on alkali metal niobates is of interest, since these materials have high piezoelectric properties plus high sound propagation rates, an important factor for practical applications. In this article, primary attention is concentrated on the investigation of trinary solid solutions $(\text{NaLiK})\text{NbO}_3$ and binary solid solutions $(\text{NaLi})\text{NbO}_3$. The solid solutions based on alkali metals were produced using the carbonate salts Na_2CO_3 , K_2CO_3 , Li_2CO_3 and niobium pentoxide. Some of the dielectric, piezoelectric and elastic properties of the binary and trinary solid solutions were studied. The studies showed that in the system $(\text{NaLi})\text{NbO}_3$, solutions with two and three mol. % LiNbO_3 have the maximum piezoelectric and elastic properties. The compositions with the highest sound propagation velocities, lowest dielectric

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USSR

Chkalova, V. V., Bondarenko, V. S., Stember, N. G., Strizhevskaya, F. N., Fokina, G. O., Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 6, Jun 73, pp 987.991. (1)

constants and highest piezoelectric properties are determined. These materials are most promising for use in high frequency ultra-acoustics. The solid solutions studied have good temperature stability and a broad range of working temperatures.

2/2

Acc. Nr:

AP0052524

Abstracting Service:

CHEMICAL ABST. 5-7c

Ref. Code:

4R0459

101168c Synthesis and studies of aromatic-aliphatic polyamides containing ether bonds in the monomer unit. Kolesnikov, G. S.; Fedotova, O. Ya.; Donetskii, I. A.; Fokina, L. T. (Khim. Tekhnol. Inst. im. Mendeleeva, Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 106-19 (Russ). The condensation of $\text{HO}_2\text{C}(\text{CH}_2)_x\text{ORO}(\text{CH}_2)_y\text{CO}_2\text{H}$ with $\text{H}_2\text{N}(\text{CH}_2)_z\text{NH}_2$ in 98% iso-PrOH or dioxane gave $-\text{O}_2\text{C}(\text{CH}_2)_x\text{ORO}(\text{CH}_2)_y\text{CONH}(\text{CH}_2)_z\text{NH}_2$ (I). These salts were neutral in alc. solns. and were easily hydrolyzed. Heating I at 130-320° during 3-5 hr in vacuo or Ar gave 69-97% $[\text{OC}(\text{CH}_2)_x\text{ORO}(\text{CH}_2)_y\text{CONH}(\text{CH}_2)_z\text{NH}_2]$ (II) (R, x, y given): 1,4- C_6H_4 , 6, 2; 1,4- C_6H_4 , 6, 6; 1,4- C_6H_4 , 6, 10; 1,3- C_6H_4 , 6, 10; 1,3- C_6H_4 , 6, 6; 1,3- C_6H_4 , 6, 10; 1,3- C_6H_4 , 6, 2; 4,4'- $\text{C}_6\text{H}_4\text{C}_6\text{H}_4$, 6, 2; 4,4'- $\text{C}_6\text{H}_4\text{C}_6\text{H}_4$, 6, 6; 4,4'- $\text{C}_6\text{H}_4\text{C}_6\text{H}_4$, 6, 10; 4,4'-isopropylidenediphenylene (III), 4, 2; III, 6, 2; III, 8, 2; III, 10, 2; III, 4, 6; III, 6, 6; III, 8, 6; III, 10, 6; III, 6, 10. The optimum prepn. conditions of I and II were established. All II had high surface hardness, formed elastic fibers from their melts, were insol. in common org. solvents, and stable $\leq 300^\circ$ in the air. CPJR

REEL/FRA
19821167

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EUSINOPHILIC LEUKEMIA -U-
AUTHOR--FOKINA, N.T. F
COUNTRY OF INFO--USSR
SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 5, PP 81-85
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--LEUKEMIA, HYPERPLASIA, BIOLOGIC STAIN, BONE MARROW, CHROMOSOME

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0473 STEP NO--UR/0504/70/042/005/0081/0085
CIRC ACCESSION NO--AP0121147
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121147

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR DESCRIBES A CASE OF EOSINOPHILIC LEUKEMIA WITH MARKED HYPERPLASIA AND METAPLASIA OF THE HEMOPOIETIC TISSUE WITH A PREVALENCE OF ANAPLASTIC EOSINOPHILIC GRANULOCYTES AND THE ABSENCE OF PH, CHROMOSOME. THE PRESENCE OF LARGE RETICULAR CELLS CONTAINING EOSINOPHILIC GRANULES IN THE BONE MARROW PUNCTATE IS A PECULIAR CYTOMORPHOLOGICAL FEATURES. THESE CELLS ARE CALLED RETICULOEOSINOPHILS BY THE AUTHOR. THE ABSENCE OF PH, CHROMOSOME AND PROLIFERATION OF RETICULOEOSINOPHILS IN THE BONE MARROW MAKE IT POSSIBLE TO INCLUDE EOSINOPHILIC LEUKEMIA INTO A SEPARATE CYTOMORPHOLOGICAL FORM, EOSINOPHILIC LEUKEMIA, RETICULOSIS. THE AUTHOR ASSUMES THAT ENDOMYOFIBROSIS WITH A DEVELOPMENT OF CIRCULATORY INSUFFICIENCY ACCOMPANYING EOSINOPHILIC LEUKEMIA IS A CONSEQUENCE OF THE AUTOALLERGIC SYNDROME. FACILITY: 3-YA KAFEDRA TERAPII TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY, MOSCOW.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--STUDY OF PEROXIDASE AND CATALASE ACTIVITY IN OXYGEN UNDER RAISED
PRESSURE -U-
AUTHOR--(04)--YEFUNI, S.N., MIKHAYLOV, YU.YE., FOKINA, T.S., SHIMKEVICH,
L.L.
CCOUNTRY OF INFO--USSR
SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 3, PP
63-65
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--OXIDASE, CATALASE, ENZYME ACTIVITY, OXYGEN TOXICITY, WHITE
MOUSE, HYPERBARIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0121

STEP NO--UR/0481/70/000/003/0063/0065

CIRC ACCESSION NO--AP0129377

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129377

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PEROXIDASE AND CATALASE ACTIVITY IN BLOOD AND CERTAIN INTERNAL ORGANS WAS STUDIED UNDER ACTION OF PURE OXYGEN WITH PRESSURE OF 5 ATMOSPHERES TILL TOXIC CRAMPS SUPERVENED IN WHITE MICE. PEROXIDASE ACTIVITY ROSE MARKEDLY IN THE PERIPHERAL BLOOD AND IN THE LEUCOCYTES INFILTRATING THE PARENCHYMATOUS ORGANS, AS WELL AS CATALASE ACTIVITY IN THE BLOOD INCREASED AT THE EXPENSE OF ERYTHROCYTOSIS (CATALASE INDEX REMAINED PRACTICALLY UNCHANGED). MARKED TISSUE EOSINOPHILIA WAS FOUND. DATA OBTAINED ARE COMPARED WITH LITERATURE DATA ON INCREASE CONTENT OF PEROXYDE COMPOUNDS IN THE BODY DURING OXYGEN INTOXICATION. IT IS SUGGESTED THAT INCREASED ACTIVITY OF THE ABOVE ENZYMES IN A SIGN OF ADAPTATION OF THE BODY TO TOXIC ACTION OF OXYGEN. FACILITY: LABORATORIYA ISKUSSTVENNOY OKSIGENATSII NAUCHNO-ISSLED. INSTITUTA KLINICHESKOY I EKSPERIMENTAL'NOY KHIRURGII, MZ SSSR, MOSKVA.

UNCLASSIFIED

USSR

UDC 547.241.07

RAZMOV, A. I., LIORBER, B. G., FOKOLOV, M. P., and KHAMMATOVA, V. M., Kazan
Chemical Technological Institute imeni F. M. Kirova

"Process for the Preparation of Phosphorylated Thiosemicarbazones"

USSR Author's Certificate No 362022, filed 1 Mar 71, published 13 Dec 72
(from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 2, 1973, p 54)

Translation: This process is improved in that the phosphorylated aldehydes
react with the thiosemicarbazides in an organic solvent with a subsequent
isolation of the desired product by a known method.

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USSR

UDC: 538.4

SIROTENKO, V. G., FOLIFOROV, V. M.

"Combined Use of MHD Devices in the Production of Mercury"

Riga, Magnitnaya Gidrodinamika, No 1, 1972, pp 140-146.

Abstract: Results are studied from investigations and experimental design work on the creation and introduction of a combination of devices for automatic production of high grade mercury based on the principles of magnetic hydrodynamics. A commercial technological plan and equipment are described for purification of mercury and certain data are presented on its operation under plant conditions.

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USSR

UDC: 621.381.41 . / .

ANTSIFEROV, V. V., DERZHI, N. M., PIVTSOV, V. S., UGOZHAYEV, V. D.,
FOLIN, K. G.

"Selection and Retuning Ruby Laser Frequencies in the Giant Pulse Mode"

Novosibirsk, Avtometriya, No 5, 1972, pp 94-97

Abstract: Results are given of an experimental investigation of three-mirror and four-mirror variants in a superregenerative laser amplifier using an industrial ruby crystal with sapphire terminations, 12 or 18 cm long and 7 mm in diameter. In a second laser, also part of the experimental apparatus, the active element was also a ruby crystal with a sapphire envelope 12 cm long and a diameter of 7 or 9 mm. The basic idea of the apparatus is that the radiation of the first laser is applied to the second to produce a giant pulse. Radiation under this system was recorded with a photoelement type PEK-15, a type I2-7 oscillograph, and a Fabry-Pérot standard with a limited resolution of $2 \cdot 10^{-2}$ Å. A diagram of the apparatus is given, together with an oscillogram of the giant pulse and an interferogram of the combined spectra of the two lasers. It is noted that the possibility of controlling the

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UDC: 621.381.41

USSR

ANTSIFEROV, V. V., et al, Avtometriya, No 5, 1972, pp 94-97

duration of the giant pulse by changing the parameters of the
first laser's resonator may be useful in several applications.

2/2

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USSR

UDC: 621.387.41

ANTSIFEROV, V. V., PIVTSOV, V. S., UGOZHAYEV, V. D., and FOLIN, K. G.

"Some Problems in the Dynamics of Solid-State Laser Oscillation"

Novosibirsk, Avtometriya, No 5, 1972, pp 98-105

Abstract: An explanation is given of the uncontrolled, unattenuated pulsations of a solid-state laser, and an expression is obtained for the coefficient of amplification as a function of the mode number. This is followed by a discussion of the thermal and mechanical perturbations in the active solid-state rod for which a resonator with plane mirrors is much more critical than one with spherical mirrors. The authors present the results of experiments they performed with a ruby laser having plane mirrors, in which oscillation in TEM₀₀₀ modes was obtained with the use of two diaphragms 1.4 mm in diameter on both sides of an active rod measuring 7 mm in diameter by 120 mm long with sapphire terminals, in a resonator more than 150 cm long. Oscillograms of the kinetics of the laser radiation are shown together with the radiation spectra. The results obtained in these experiments are compared 1/2.

USSR

UDC: 621.387.41

ANTSIFEROV, V. V., et al, Avtometriya, No 5, 1972, pp 98-105

with those of other experimenters. Authors of the present article express their gratitude to A. S. Kuch'yanov and A. V. Gayner for their assistance.

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Optics & Spectroscopy

USSR

UDC 621.373 : 535] : 548.0

ANTSIFEROV, V. V.; PIVTSOV, V. S., UGOZHAYEV, V. D., and FOLIN, K. G.

"Nonspiking Generation of Ruby Laser With Frequency Selection and Tuning"

Leningrad, Optika i Spektroskopiya, Vol 32, No 6, Jun 72, pp 1159-1162

Abstract: The authors report that they are the first to obtain a partially regular mode, stable over a wide pumping range and close to single-frequency, for the generation of a ruby laser with a frequency which is practically constant throughout the lasing time ($\sim 10^{-3}$ sec.) and with frequency tuning. The stable and reproducible mode is obtained by the compensated phase modulation method, with the use of series-produced ruby rods 120 mm long and 7 mm in diameter and a geometric cavity length of $L \geq 150$ cm. To smooth transient spiking, a KS-14 filter is placed in the cavity to provide weak negative, passive feedback. The Fabry-Perot etalon is used for frequency selection and tuning. The half-intensity width of the integral spectrum does not exceed $0.003 \text{ }^{\circ}\text{A}$, and the tuning is in the $5\text{-}\text{A}$ range. The generation mode is stably reproduced over a wide pumping range (up to four times above the

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USCR

ANTSIFEROV, V. V., et al., Optika i Spektroskopiya, Vol 32, No 6, Jun 72, pp 1159-1162

threshold). Half-intensity divergence does not exceed 3.5' (diffraction divergence 1.8'). Thus, the authors obtained a nonspiking ruby laser with close-to-diffraction divergence and a spectral width which is comparable to a He-Ne laser but considerably exceeds it in the tuning range and the possible spectral radiation density value.

The authors thank G. V. KRIVOSHCHIEV for his interest in the work and A. S. KUCH'YANOV and N. M. DERZHI for their assistance in the experiment.

2/2

1/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--TRANSIENT PROCESS AND STATISTICAL PHENOMENA IN AN HE-NE LASER NEAR
THE EXCITATION THRESHOLD -U-
AUTHOR-(03)-TELEGIN, G.G., UGOZHAYEV, V.D., FOLIN, K.G.
COUNTRY OF INFO--USSR
SOURCE--OPTIKA I SPEKTROSKOPIIA, VOL. 28, FEB. 1970, P. 353-356
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HELIUM NEON LASER, LASER EXCITATION, LASER OSCILLATION, SINGLE
MODE LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1479 STEP NO--UR/0051/70/028/000/0353/0356
CIRC ACCESSION NO--AP0112473
UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0112473

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL INVESTIGATION OF THE STATISTICAL CHARACTERISTICS OF THE TRANSIENT PROCESS IN A HELIUM-NEON LASER OPERATING AT A WAVELENGTH OF 6328 A NEAR THE EXCITATION THRESHOLD, UNDER CONDITIONS WHERE THE RISE TIME OF THE LIGHT WAVE FIELD IN THE RESONATOR EXPERIENCES PRONOUNCED OSCILLATIONS. BLOCKING PULSES OF A DURATION OF 30 MICROSECONDS WITH A STEEP TRAILING EDGE WERE APPLIED TO AN ELECTROOPTICAL SWITCH. OSCILLOGRAMS OF THE TRANSIENT LASING PROCESS WERE OBTAINED FOR SINGLE MODE AND MULTIMODE OPERATION. THE STATISTICAL CHARACTERISTICS OF THE TRANSIENT PROCESS ARE COMPARED WITH VALUES CALCULATED FROM FORMULAS FOR THE MEAN RISE TIME AND MEAN SQUARE DEVIATION PROPOSED BY BAKLANOV ET AL. (1969).

UNCLASSIFIED

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USSR

UDC 669.71.042.6

MIKHAYLOV, K. N., GAVRILOV, S. S., VASILEVSKIY, A. M., MARCHENKO, A. M.,
FOL'KHIN, G. D., and PECHENEV, V. S.

"Casting of Ingots of Aluminum Alloys in Multiple-Crystallizer Systems"

Tekhnol. legkikh splavov. Nauchno-tekhn. byul. VILSa [Technology of Light Alloys. Scientific and Technical Collection of All-Union Institute of Light Alloys], No. 4, 1970, pp. 30-34, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No. I G113 by G. Svodtseva).

Translation: A 24-crystallizer system for casting of aluminum alloy ingots 112, 145, and 165 mm in diameter on a single casting machine from a single tap hole has been developed and tested in order to increase the productivity of labor and casting equipment. A diagram and drawing of the installation are presented. 3 illustrations.

1/1

AA0038801

HOLOMEYEV A.A.

UR 0482

3

Soviet Inventions Illustrated, Section I Chemical, Derwent, 3-78

238380 HEAT TREATMENT OF CONCRETE AND REINFORCED CONCRETE ARTICLES is carried out by means of a.c. of main frequency during the vibrational formation of the articles. The temperature is rapidly increased to 90-100°C (instead of the conventional rate of 20°C/hr.), whereby the duration of the articles, the moulds are removed without delay, and the articles are further heated at the same temperature until the desired strength is reached. As electrodes, insulated parts of the forming machines or reinforcement elements are used. Compared with the known methods, this process is shortened by 2-4 hrs. The density of the articles is increased, because the vibrational formation is carried out at elevated temperatures. There is no temperature gradients, so that internal stresses do not develop. The removal of the mould elements is facilitated because of the formation of a vapour layer at the contact surfaces. 26.10.67. as 1194251/29-33. B.A.KRYLOV et alia. Institute of Concrete and Reinforced Concrete. (10.7.69.) Bul.9/20.2.69. Class 80a. Int.Cl. B28c.

13740001

AA0038801

AUTHORS: Krvlov. B. A.; Li. A. I.; Malinina, L. A.;
Mironov, S. A.; Rudenko. I. F.; Folomeev, A. A.;
and Shchurov. Yu. I.

Nauchno - Issledovatel'skiy Institut Betona i Zhelezobetona

2/2

19740002

USSR

UDC 669.295:620.18:

:621.791.052

YERMOLOVA, M. I., and FOLOMEYEVA, M. A., All-Union Scientific Research Institute of Aviation Materials

"Structure and Phase Transformations in Welded Joints of VT14 and VT22 Alloys"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 59-62

Abstract: Welded specimens of two-phase titanium alloys VT14 and VT22, 1.5-2.0 mm thick, produced by automatic argon-arc welding without additive, were investigated after welding and following heat treatment. In the welded joint of VT14 alloy metastable α' , α'' , and β -phases develop after welding, the decay products of which lead in prolonged aging to a plasticity loss of the welded joint metal in the near-seam weakness zone. In the welded joint of VT22 alloy, the metastable β -phase developing

1/2

USSR

YERMOLOVA, M. I., and FOLOMEYEVA, M. A., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 59-62

after welding disintegrates on aging and produces an embrittling ω -phase. Welded joints of both alloys are not recommended to be applied without stabilizing anneal, because the decay products of their metastable phases, developing in the seam and in the near-seam zone, after heating at 300-400°C lower the plasticity of the metal. Three figures, three tables.

2/2

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--UPTAKE OF STRONTIUM 90 AND CESIUM 137 INTO PLANTS IN RELATION TO
THE RADICALEMENT ADSORPTION BY MECHANICAL FRACTIONS OF SOILS -U-
AUTHOR-(03)-YUDINTSEVA, YE.V., GULYAKIN, I.V., FOLUNKINA, Z.H.
CCUNTRY OF INFO--USSR
SOURCE--AGROKHIMIYA 1970, (2), 30-9 (RUSS)
DATE PUBLISHED-----70
SUBJECT AREAS--AGRICULTURE, EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--SOIL CHEMISTRY, STRONTIUM ISOTOPE, CESIUM ISOTOPE, ADSORPTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PRUXY REEL/FRAME--3002/0498 STEP NG--UR/0485/70/000/002/0030/0039
CIRC ACCESSION NO--AP0128067
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NU--AP0128067

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PRIME90 SR IS ADSORBED BY ORG. AND INORG. SOIL FRACTIONS, AND THE STRENGTH IS DETD. BY THE NATURE OF THE MINERAL CONSTITUENTS. PRIME137 CS IS MAINLY ADSORBED BY THE MINERAL FRACTIONS. THERE EXISTS A CLOSE CORRELATION BETWEEN THE PRIME90 SR QUANTITY DESCRIBED BY 0.1N CACL SUB2 AND ITS ACCUMULATION IN THE CROP. BOTH NUCLIDES ARE HELD BY THE SILT FRACTION OF CHERNOZEM STRONGER THAN BY THAT OF SOD PODZOLS, WHICH HAS ITS BASE IN THEIR DIFFERENT MINERALOG. COMPN. FACILITY: BIOFIZ. LAB., VSES. NAUCH. -ISSLED. INST. FITOPATOL., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.313.333:538.4

ANDREYEV, A. M., BARANOV, G. A., FOLUBOVICH, G. P., POTEMIN, Yu. V.

"Cylindrical Induction Pump with Cooled Internal Magnetic Conductor"

Riga, Magnitnaya Gidrodinamika, No 3, Jul-Sep 72, pp 150-151.

Abstract: The authors attempted to develop a cylindrical induction pump with a reliable, easy-to-use cooling system for the internal magnetic circuit, equal or nearly equal to traditional designs in hydraulic properties. An example diagramed for pumping liquid metal coolants at 850°C can deliver 326 m³/hr and develop a pressure of 4 kg/cm².

1/1

FOMCHENKO, V. M.

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TECHNICAL TRANSLATION

0807 PSTCART 23-2015-72

27 Nov 72

RUSSIAN TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV,
SEPTEMBER 1968

FOREIGN TITLE: PROBLEMY PEREDACHI INFORMATSII LAZERNYI IZLUCHENIYEM

AUTHOR: I. A. DERYGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY
INENI T.G. SHEVCHENKO

Translated for FSTC by ACS1

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- 1111 Page -

USSR

UDC: 531.7.087.92

BOGATYREV, N. T., FOMENKO, A. A.

"Current Relay"

Shakhtnaya Avtomatika [Mine Automation -- Collection of Works], Donetsk, 1969, pp 83-86 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7, 1970, Abstract No 7A108, by N. S.)

Translation: A current relay of a new design is analyzed. The relay consists of a body, transition clutches, permanent magnets, a ferromagnetic ball, limiting grids, a type MKV-1 magnetically controlled contact, four filter magnets, and a screen. The operating principle of the relay is described and its technical characteristics are presented. Two illustrations.

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USSR

UDC: 621.317.328

TREKHOV, Ye. S., FOMENKO, A. F.

"Measurement of High-Frequency Electromagnetic Fields in a Stationary Induction Discharge at Atmospheric Pressure"

V sb. Vopr. fiz. nizkoterperaturn. plazmy (Problems of Low-Temperature Plasma Physics--collection of works), Minsk, "Nauka i tekhn.", 1970, pp 195-198 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A328)

Translation: A magnetic probe is used for experimentally measuring the spatial distribution of the high-frequency electromagnetic field in a stabilized vortex discharge plasma at atmospheric pressure. The resultant experimental data are used with Maxwell's equations to determine the strength of the high-frequency field, phase angles, rf current density, conductivity, the power released in the plasma, and the resistance which is introduced, all in terms of a unit of length of the discharge. Experimental and theoretical results are compared. Two illustrations, one table, bibliography of seven titles. Resumé.

1/1

Radiation Chemistry

USSR

UDC 678.675:126.019.3:538.16

FURMAN, YE. G., ABRAMOVA, T. M., DAR'YEVA, E. P., SPININA, I. A., FOMENKO, A. S.,

"Radiation-Chemical Transformations of Polycaproamide in the Presence of Secondary Aromatic Amines"

Moscow, Plasticheskiye Massy, No 1, Jan 72, pp 12-15

Abstract: The paper presents the results of a study of the effect which esters of 4-hydroxydiphenylamine and certain other secondary aromatic amines, as well as substituted phenols have on process of radiation and radiation-oxidation destruction of polycaproamide. Seventeen of these additives were studied in quantities of 0.03 mole/kg. Studies were made of the influence of the additives on accumulation of free radicals, gas release, fragmentation of the polymer chain during radiolysis and radiation oxidation of polycaproamide, as well as their effect on accumulation of peroxide and carboxyl compounds as a function of temperature and concentration of the additive accompanying radiation oxidation of the polymer. The elec ron paramagnetic resonance method was used to determine the structure and stability of the radicals formed when secondary aromatic amines interact with the peroxide radicals which arise during radiation oxidation of the polycaproamide and its low-1/2

JRMAN, YE. G., et al., *Plasticheskiye Massy*, No 1, Jan 72, pp 12-15.

molecular analog -- N-butylpropionamide. It is found that secondary arylamines have a protective effect during radiation oxidation of polyamides, and that this effect is due to the interaction between peroxide radicals and amines, resulting in the breaking of chains and leading to stable nitrate radicals instead of reactive peroxide radicals. The authors thank S. I. Burnistrov for furnishing some of the specimens. Five figures, two tables, bibliography of eleven titles.

USSR

UDC 538.4

VULIS, L. A., GENKIN, A. L., FOMENKO, B. A.

"Theory and Calculation of Magnetogasdynamic Flows in Channels"

Moscow, Teoriya i raschet magnitogazodinamicheskikh techeniy v kanalakakh, Atomizdat, 1971, 384 pp

Abstract: This book is devoted to one of the important branches of magnetogasdynamics, flows of weakly ionized plasma in an MHD channel at magnetic Reynolds numbers that are small as compared with unity. As concerns applications it is oriented toward the study of flow processes and energy transformation in the linear channel of a dc conduction MHD generator. The book is intended for scientific workers and engineers concerned with heat physics, power engineering, and mechanics. It can be used to obtain a general familiarization with the subject or with particular problems in engineering calculations, design, and the study of the channel of MHD plasma devices, and it can serve as a text for the study of magnetic and general gasdynamics in engineering institutions. The book contains 90 figures, 20 tables, and a bibliography of 366 references. The table of contents follows:

1/3

USSR

VULIS, L. A., et al, Teoriya i raschet magnitogazodinamicheskikh techeniy v kanalakh, Atomizdat, 1971, 384 pp

Part One. Basic Equations

Chapter 1. Equations of Gasdynamics

Chapter 2. Electromagnetic Field Equations

Chapter 3. Magnetogasdynamics Equations

Chapter 4. Elements of Kinetics

Part Two. Elementary Theory of the Channel of a Magnetogasdynamic Generator

Chapter 5. Magnetohydrogas Analogy

Chapter 6. Qualitative Analysis of Flows and Energy Transformation

Chapter 7. Calculations of Quasi-One-Dimensional Flow

Chapter 8. Calculations of an Optimal MHD Channel

2/3

USSR

VULIS, L. A., et al, Teoriya i raschet magnitogazodinamicheskikh techeniy v kanalakh, Atomizdat, 1971, 384 pp

Chapter 9. Nonstationary Flow in a Channel

Part Three. Calculation of Boundary Effects in the Channel

Chapter 10. Electric Field Distribution in the Channel

Chapter 11. Calculation of Processes Near the Electrodes

Chapter 12. Plasma Flow in the Boundary Layer

Part Four. Some Special Problems

Chapter 13. The Effect of the Temperature Dependence of Conductivity

Chapter 14. Stability of a Low-Temperature Plasma

3/3

1/2 025 UNCLASSIFIED PROCESSING DATE—30OCT70
TITLE—RESONANCE OF D,D,P, PRIME³ T REACTION AT LOW ENERGIES —U—
AUTHOR—(03)—ADYASEVICH, B.P., ANTONENKO, V.G., FOMENKO, D.YE.
COUNTRY OF INFO—USSR
SOURCE—YAD. FIZ. 1970, 11(4), 732-5
DATE PUBLISHED—70
SUBJECT AREAS—PHYSICS
TOPIC TAGS—DEUTERIUM, DEUTERON BOMBARDMENT, TRITIUM, RESONANCE ABSORPTION
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAE—2000/1000 STEP NO—UR/0367/70/011/004/0732/0735
CIRC ACCESSION NO—AP0124659
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124659

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VECTOR PRIMEA SUB2 (90DEGREES) AND TENSORS P PRIMEA SUB33 (90DEGREES) AND P PRIMEA SUB11 (90DEGREES) MINUS P PRIMEA SUB22 (90DEGREES) OF THE REACTION D(D,P) PRIME3 H (A POLARIZED D BEAM) WERE MEASURED IN THE ENERGY REGION 60-150 KEV AS WELL AS THE LEFT RIGHT ASYMMETRY EPSILON(90DEGREES) OF THIS REACTION IN THE REGION 60-505 KEV. THE DETD. VALUES HAVE NO RESONANCE SINGULARITIES WHICH WERE PREVIOUSLY OBSD. PARTICULARLY NEAR 105 KEV. FAICLITY: INST. AT. ENERG. IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:

AP 0036758

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code:

UR 0068

78550k Preparation of mesitylene and durene by the isomerization and disproportionation of pseudocumene. Kolvandr, L. Ya.; Privalov, V. E.; Fomenko, G. M.; Nikitina, K. A.; Lokshina, L. S.; Kochergin, V. A.; Khvalkov, N. M.; Krish-topa, A. P.; Bilym, L. M.; Grebinnik, Z. G. (Kadiev. Kokso-khim. Zavod, Kadievka, USSR). *Koks Khim.* 1970, (1), 33-40 (Russ). 1,2,4-Me₃C₆H₃ (I) of 90-5% purity was prepd. by rectifying coke chem. solvents (20-35 and 10-20% Me₃C₆H₄, 4-6 and 3-5% *m* + *p*-EtC₆H₄Me, 15-17 and 10-12% 1,3,5-Me₃C₆H₃ (II), 1-1.2 and 0.7-0.9% *o*-EtC₆H₄Me, 16-18 and 12-14% I, 1-2 and 2-3% 1,2,3-Me₃C₆H₃, 2-6 and 1-3% satd. hydrocarbons, and 0 and 2-3% unsatd. compds.) on columns having 50 theoretical plates at a reflux no. of 60-100. Isomerization and disproportionation in the presence of 30% of an AlCl₃-I complex at 127° for 3 hr in exptl. app. yielded 4.00% C₆H₆-PhMe-satd. compds., 17.27% Me₂C₆H₄, 17.02% II, 35.09% I, and 10.71% durene (III). Yields in plant runs were similar. Rectification of the II fraction on a lab. column having 75 theoretical plates at a reflux no. of 80-100 yielded II of 97.5% purity in 39.24% yield. After rectification to increase III concn. to 45.94% in the III fraction, recrystn. at 5 to -18° yielded III of ~82% purity and further recrystn. with 35% PhMe gave III of ~97% purity in ~85% yield (17% selectivity from I and 1.6% from the coke chem. solvent). Lucile S. Davison

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19721671

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USSR

UDC: 621.384.6

DIDENKO, A. N., FOMENKO, G. P.

"Effect Which Intense Fluxes of Accelerated Particles Have on the Parameters of Superconducting Traveling-Wave and Standing-Wave Resonators"

Moscow, Radiotekhnika i Elektronika, Vol. 16, No 6, Jun 71, pp 1017-1023

Abstract: A detailed analytical investigation is made of processes of energy accumulation and the effect of beam loading on the electrodynamic parameters of superconducting systems in the standing-wave mode and in a system which utilizes the traveling-wave mode with a feedback ring in linear accelerators. It is shown that traveling-wave resonators have appreciable advantages over standing-wave resonators under certain accelerator operating conditions.

1/1

- 140 -

USSR

UDC 621.382.93.535.371

RYZHIKOV, I.V., BUNYAYEV, V.A., FOMENKO, G.P., VORONIN, V.G., KMITA, T.G.,
PRONIN, B.V., KHOKHLOV, K.I., KRUGLOV, I.I., MIKHAYLOV, V.V., TENYAKOV, YE.I

"Voltampere And Lumenampere Characteristics Of Silicon Carbide Light Diodes With
High Current Density"

V sb. III Vses. konferentsiya po poluprovodnikov. karbidy kremniya (III All-Union
Conference On Semiconductors Of Silicon Carbide), 1968, Moscow, 1970, pp 116-126
(from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B301)

Translation: Light diodes were investigated, obtained by diffusion of Al and B
into n-SiC (6H) at 2000° C (for 40 minutes) and by diffusion of B alone for 10
minutes. The resistivity of the source material is 0.01--0.3 ohm.cm. The
circuit for measurements, the experimental results and their consideration are
presented. It is established that the voltampere characteristics with a current
density 1-5000 a/cm² are described by the expression $I = AV^n$ ($n = 1.6-1.2$), and
the lumenampere by $L = I^n$ ($n = 0.55-0.7$). Such dependences are the consequence
of a radiative and nonradiative recombination of the carriers in all the regions
of the p-n-n⁺ diode. A deviation is observed from the theory connected with the
capture of majority carriers by fine centers of attachment. 7 ill. 10 ref. N.S.

1/1

- 74 -

USSR

UDC 553.98:551.247:550.837.622.241(574.12/13)

ANISHCHENKO, G. N., DEMENT'YEVA, I. G., VILENCHIK, A. M., MITROFANOV, K. P.,
POGREBINSKIY, S. A., ROMANENKO, V. P., and FOMENKO, K. Ye., Trust for Special
Geophysical Operations, Ministry of Geology, USSR

"Electrometric Research on the Border Zone of the Pre-Caspian Depression by
the Method of Telluric Currents"

Moscow, Neftgazovaya Geologiya i Geofizika, No 5, 1972, pp 36-42

Abstract: The article summarizes the results of research in the pre-Caspian depression by the method of telluric currents. This method was used for mapping the elements of the salt tectonics in this territory on the basis of the acute difference between the specific resistance of the salt and that of the sediments of the persalt complex. The results, classified according to the regions of the investigated territory and the character of the relation with the cross-section, are briefly set forth. An analysis of the nature of the telluric anomalies is given. 4 figures.

1/1

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USSR

UDC 575.24

GAZIYEV, A. I., ~~POVENKO, L. A.~~, SUKHORUCHKINA, L. V., and KUZIN, A. M.,
Corresponding Member, Academy of Sciences USSR, Institute of Biophysics,
Academy of Sciences USSR, Pushchino-na-oke

"Analysis of Internucleotide Breaks in Gamma-Irradiated DNA Repairable With
Polynucleotide Ligase"

Moscow, Doklady Akademii Nauk SSSR, Vol 199, No 1, 1971, pp 216-218

Abstract: The purpose of the work was to study the quantitative relationships between phosphate breaks in DNA repairable and nonrepairable by polynucleotide-(PN) ligase as a function of the irradiation dose. The analysis was carried out by quantitatively joining breaks in the phosphate bond with PN-ligase and by splitting off the free phosphorus with alkaline phosphatase. DNA with a radioactive label was obtained from a culture of *Bacillus subtilis* SHGW grown on a medium containing P^{32} . The yield of breaks repairable and nonrepairable by PN-ligase was in a linear relationship to the dose. The number of repairable breaks constituted 77 to 85% of the total. The large number of $5'PO_4 \sim 3'OH$ internucleotide breaks is ascribed to the oxidation of $3'C$ -desoxyribose and labilization of the $3'-O-P$ bond.

1/1

USSR

UDC: 621.317:621.318.1

FOMENKO, L. A.

"Measurement of the Characteristics of Materials on Radio and Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 148-150 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A293)

Translation: Magnetic and dielectric spectroscopy are examined in their contemporary and historical aspects. It is pointed out that studies can be done by three different groups of methods, and the basic problems for these groups are enumerated. The reliability of the results is formally evaluated by mathematical methods based on the Kramers-Kronig dispersion relations, and by analysis of the physical mechanisms of phenomena when experimental data are compared with the theoretical expectation. A considerable expansion in the concept of the magnetic spectrum is noted. E. L.

1/1

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1/2 042 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--RHEOLOGICAL PROPERTIES OF POLY M, PHENYLENEISOPHTHALAMIDE -U-
AUTHOR--(04)--FOMENKO, L.N., GERASIMOV, V.D., KUZNETSOV, G.A., SOKOLOV, L.B.
COUNTRY OF INFO--USSR
SOURCE--PLAST. MASSY 1970, (3), 27-30
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POLYMER RHEOLOGY, POLYPHENYENE RESIN, AMIDE, SHEAR STRESS,
VISCOMETER, MACROMOLECULE, MOLECULAR WEIGHT, HYDRODYNAMIC PROPERTY,
CRYSTALLIZATION, VISCOUS FLOW

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1997/0658 STEP NO--UR/0191/70/000/003/0027/0030
CIRC ACCESSION NO--AP0119566
UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119566

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RHEOL. PROPERTIES OF THE TITLE POLYMER (I) WERE STUDIED IN A WIDE RANGE OF TEMPS. AND SHEAR RATES. AT A STRESS LARGER THAN 3 TIMES 10 PRIME7 DYNE-CM PRIME2 I Began TO CRYSTALLIZE IN THE VISCOMETER AND WAS NO LONGER FLUID, PRESUMABLY DUE TO STRAIGHTENING AND ORIENTATION OF MACROMOLS. IN A HYDRODYNAMIC FIELD. UNDER ALTERNATIVE CONDITIONS (I.E., WHEN THERE WAS CRYSTN.), THE RHEOL. PROPERTIES OF I RESEMBLED THOSE OF MOST OTHER POLYMERS. THE VISCOUS FLOW OF I WAS AN EXPOENTIAL FUNCTION OF THE MOL. WT.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--ALLOWANCE FOR NONADDITIVE RANDOM NOISE IN CONTROLLER ANALYTICAL
DESIGN -U-
AUTHOR--FOMENKO, O.N. F
COUNTRY OF INFO--USSR
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, TEKHNIЧЕСКАЯ КИБЕРНЕТИКА,
JAN.-FEB. 1970, P. 186-194
DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES, PHYSICS
TOPIC TAGS--DIFFERENTIAL EQUATION, RANDOM NOISE SIGNAL, COMPUTER
APPLICATION

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--1996/1924 STEP NO--UR/0280/70/000/000/0186/0194
CIRC ACCESSION NO--AP0118886
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0118886

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEVELOPMENT OF A METHOD OF DERIVING THE DIFFERENTIAL EQUATIONS OF A CONTROLLER, WHICH PROVIDES OPTIMUM TRANSIENT RESPONSE IN THE SENSE OF AN OPTIMUM INTEGRAL 0 FACTOR FOR A CONTROLLED PLANT WITH INDETERMINATE PARAMETERS. PARTICULAR ATTENTION IS GIVEN TO THE ANALYSIS OF CONTROLLED PLANTS DESCRIBED BY DIFFERENTIAL EQUATIONS WITH INDETERMINATE PARAMETERS. SOME RESULTS OBTAINED ON AN ANALOG COMPUTER ARE PRESENTED.

UNCLASSIFIED

USSR

UDC: 621.3.049.75:774

LAVRISHCHEV, V. P., VOZHENIN, I. N., KANDYBA, P. Ye., MOROKOVA, R. A., JOMENKO, P. A.

"A Method of Making Microcircuits"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratstv, Tovarnyye Znaki, No 16, 1970, Author's Certificate No 271598, filed 6 May 68, p 41

Abstract: This author's certificate introduces a method of making microcircuits based on repeated selective chemical etching. As a distinguishing feature of the patent, the procedure is designed to provide a broad range of resistor values in a single microcircuit and to simplify manufacturing technology. Resistive layers with various resistivities are applied in sequence to the substrate in order of decreasing resistivity, and the technological layer is used for making low-value resistors.

1/1

- 220 -

USSR

535.813:666.1.053.65

F
FURMAN, Sh. A., FOMENKO, P. N., SKORODUMOV, V. N., KATSNEL'SON, L. B.

"Vacuum Application of Multi-Layered Dielectric Coatings on Large Parts"

Optiko-Mekhanicheskaya Promyshlennost', No. 3, 1970, pp 36-41.

Abstract: The vacuum-method application of dielectric materials forming multi-layered coatings on large optical parts up to 2600 mm in diameter, and the usage of a vacuum installation with a chamber diameter of 3250 mm, equipped with a system beneath the cap with a rotating evaporator and photometer, which tests the thickness of the layers during the process of manufacture of the coating are analyzed. Photographs are presented of parts of the system. The investigations showed that the coatings had identical optical characteristics at various points on the surface of the specimen and good operational qualities. For example, mirrors were prepared, consisting of 9 to 13 alternating layers of zinc sulfide and magnesium fluoride or zinc sulfide and strontium fluoride, having $R = 98-99.5\%$ in the area of the main maximum of coefficient of reflection, and minimum and maximum values of R for a fixed wave length differing by not over 0.1% over a 1400 mm diameter surface area. The coatings have high mechanical strength, can be cleaned with a dry cloth, ether, alcohol or a cotton pad wet with water.

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USSR

UDC 619:616.981.42-084:636.32/.38

TRILENKO, P. A., Professor, FISHBEYN, V. Ya., Candidate of Veterinary Sciences, Leningrad Veterinary Institute, BALANDIN, F. G., Chief Veterinary Surgeon of Veterinary Division, GUKOV, A. S., Chief Veterinary Surgeon, and FOMENKO, T. V., Veterinary Surgeon of Oblast Veterinary Laboratory, Volgogradskaya Oblast

"An Experiment in Sanitation Among Flocks of Sheep for the Prevention of Brucellosis"

Moscow, Veterinariya, No 11, 1971, pp 54-55

Abstract: Because brucellosis vaccination with strain 19 produces low immunity in sheep and the antibodies developed cannot be differentiated from those produced during natural brucellosis, an experiment with live nonagglutinating vaccine from strain Br. melitensis K-24 was conducted in a sovkhos over a period of 7 years. It was established that sheep which are brucellosis carriers but do not react in tests with standard antigens, may, after vaccination with strain K-24, have agglutinins in their blood and react to the standard antigens, owing to provocation of the latent infection by the vaccinal culture. Thus, vaccine from this strain can help clear a flock of hidden brucellosis carriers, at the same time promoting greater resistance to infection among the rest of the flock. Animals reacting allergically need not be removed, as the

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TRILENKO, P. A., et al., Veterinariya, No 11, 1971, pp 54-55

K-24 vaccine also produces an allergic reorganization. As a result of systematic vaccination, isolation, and/or removal of reactive animals, coupled with other preventive measures, at the end of the experiment in 1969, an absence of brucellosis-caused abortions, practical absence of serologically reactive sheep, and marked decrease of postvaccination allergy were recorded.

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GORODETSKIY, B. V. and FOMENKO, V. K.

"Method of Estimation of the Reliability of ASK Testing (Review)"

Vopr. Tekhn. Diagnostiki [Problems of Technical Diagnosis -- Collection of Works], No 10, Taganrog, 1973, pp 94-115 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V630).

Translation: Published works on the reliability of testing are summarized and systematized. In Part I of the review, the influence of such factors as error in measurement and comparison, reduction of the field of tolerance, testing time, reliability of the testing equipment, etc. on the probability of undetected and false failures during testing of one parameter is studied. Part II studies problems of reliability of testing of multiparameter objects.

Authors' view

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1/2 020
TITLE--PROJECTION IN THE OCCUPATION NUMBER SPACE AND THE CANONICAL
TRANSFORMATION -U-
AUTHOR--EDMENKO, V.N. F
COUNTRY OF INFO--USSR
SOURCE--J. PHYS. A. PROC. PHYS. SOC. (GEN) (GB) SER., VOL. 3, NO. 1, P.
8-20 (JAN. 1970)
DATE PUBLISHED---JAN70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ENERGY THEORY, MATRIX ELEMENT, LINEAR OPERATOR, PERTURBATION
THEORY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/0436 STEP NO--UK/0000/70/003/001/0008/0020
CIRC ACCESSION NO--AP0111629
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0111629

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD FOR PROJECTING THE BARDEEN-COOPER-SCHRIEFFER STATES WITH RESPECT TO THE PARTICLE NUMBER IS SUGGESTED. THIS METHOD DOES NOT INVOLVE THE FOWLER-DARWIN INTEGRALS WHICH ARE USUALLY APPLIED FOR THIS PURPOSE. ENERGY MATRIX ELEMENTS OF AN ARBITRARY SINGLE PARTICLE OPERATOR AND OVERLAP INTEGRALS ARE CALCULATION IN THE QUASI PARTICLE REPRESENTATION AND ARE EXPRESSED ANALYTICALLY IN TERMS OF THE U AND V PARAMETERS. THE VOLUME OF CALCULATIONS ACCORDING TO THE METHOD SUGGESTED INCREASES LINEARLY WITH THE SIZE OF THE SYSTEM IN THE CASE OF FACTORIZABLE PAIRING MATRIX ELEMENTS (THE WEAKER THE PARTICLE NUMBER FLUCTUATIONS, THE SMALLER THE QUANTITY OF CALCULATIONS). THE METHOD IS ILLUSTRATED BY SOME MODEL SYSTEMS. IN THE PAPER THE LIMITING CASE OF WEAK CORRELATIONS IS CONSIDERED AND COMPARISON WITH PERTURBATION THEORY IS CARRIED OUT.

FACILITY: LENINGRAD STATE UNIV., USSR.

UNCLASSIFIED

FOMENKO, V.S.

Chemistry

EMISSION PROPERTIES OF MATERIALS

UDC 5.657.9
24 July 1972

Translation of Russian-language book by V. S. Fomenko, ~~Editorial~~
Sovietva Kuchelovoy, 1970, third revised and supplemented edition,
signed to press 2 November 1970, Naukova Dumka Publishing House,
Kiev, 146 pages, UDC 537.933.2.

Chemistry

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USSR

PODCHERNYAYEVA, I. A., and FOMENKO, V. S.

"All-Union Symposium on the Investigation of Materials for Plants for the Direct Conversion of Different Energy Forms Into Electricity"

Kiyev, Poroshkovaya Metallurgiya, No 7 (103), Jul 71, pp 105-106

Abstract: The "All-Union Symposium on the Investigation of Materials for Plants for the Direct Conversion of Thermal and Chemical Energies Into Electricity" was held in Kiev, November 26-29, 1971. The Symposium was organized by the Materials Section of the Scientific Council of the Academy of Sciences USSR on the complex problem "Methods of Direct Conversion of Thermal Energy Into Electric Energy", the Division of Physico-Technical Problems of Energetics of the Academy of Sciences UKrSSR, and the Institute of the problems of Materials Science of the Academy of Sciences UKrSSR. One hundred fifty scientific and technical workers participated, representing 40 organizations. The papers dealt with theoretical and experimental investigations of electronic structures and various physico-chemical, physico-technical, and working properties of electrode and electro-insulating materials. The plenary session included 70 reports on the state and prospects for the development of materials for direct energy conversion plants, held in four sections: magneto-hydro-

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PODCHERNYAYEVA, I. A., and FOMENKO, V. S., Poroshkovaya Metallurgiya, No 7 (103), Jul 71, pp 105-106

dynamic generators, thermoelectric generators, thermoelectronic transformers, and fuel cells. The reports can be characterized generally as follows: 1. Information storage of experimental data on thermal, electrophysical, thermomechanical, thermo-emission, and adsorption properties and thermo-dynamic and crystal chemistry characteristics of electrode and electro-insulating materials. 2. Generalization of experiences in the exploitation of materials under natural and model conditions of direct energy conversion. 3. Development of prospects for creating effective electrode and electro-insulating materials. In papers of the first section, new materials for lining and production of current collectors were discussed. Papers of the second section dealt with the physics, physical chemistry, and technology for production of semiconducting and insulating materials of thermoelectric cells. The third section dealt with investigations of the structures of adsorbed films of alkaline - earth metals on different singlecrystal faces of tungsten and rhenium and cesium adsorption on alloys of refractory metals. The fourth section included papers discussing production of porous nickel electrodes with high values of specific surface and electroconductivity at which the electrode activation process is in coincidence with sintering at temperatures of 750-110°C.

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1/2 047 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--PLASTIC DEFORMATION OF LEAD IN THE NORMAL AND SUPERCONDUCTING
STATES -U-
AUTHOR--(03)--PUSTOVALOV, V.V., STARTSEV, V.I., FOMENKO, V.S.
COUNTRY OF INFO--USSR
SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 37, NR 1, PP 413-423
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--LEAD, PLASTIC DEFORMATION, SUPERCONDUCTIVITY, CRYSTAL
DISLOCATION, CONDUCTION ELECTRON, STRESS ANALYSIS, DUCTILITY, SINGLE
CRYSTAL PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1989/1077 STEP NO--GE/0030/70/037/001/0413/0423
CIRC ACCESSION NO--AP0107586
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0107586

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS ARE GIVEN OF A SYSTEMATIC INVESTIGATION OF THE DIFFERENCES BETWEEN THE MACROSCOPIC CHARACTERISTICS OF PLASTICITY OF LEAD SINGLE AND POLYCRYSTALS OF 99.9992 AND 99.9995 PERCENT PURITY IN THE SUPERCONDUCTING STATE AND IN THE NORMAL STATE AT THE SAME TEMPERATURE. IN THE SUPERCONDUCTING STATE THE CRITICAL RESOLVED SHEAR STRESS OF SINGLE CRYSTALS, THE YIELD POINT OF POLYCRYSTALS, AND THE FLOW STRESS FOR DIFFERENT STAGES OF DEFORMATION ARE LOWER THAN IN THE NORMAL STATE. NEAR THE FRACTURE AND AT THE TENSILE STRENGTH NO DIFFERENCE BETWEEN THE FLOW STRESS IN THE NORMAL AND SUPERCONDUCTING STATE WAS OBSERVED. A TEMPERATURE DEPENDENCE OF MACROSCOPIC PROPERTY CHANGES WAS NOT FOUND IN THE TEMPERATURE RANGE OF 1.8 TO 4.2 DEGREES K. THE RESULTS OBTAINED REVEAL AN ESSENTIAL CONTRIBUTION FROM THE DRAG DUE TO CONDUCTION ELECTRONS TO THE RESISTANCE TO DISLOCATION MOTION. THE ESSENTIAL INTERACTION WITH CONDUCTION ELECTRONS IMPLIES THAT IN PURE METALS THE DISLOCATIONS MOVE WITH RATHER LARGE VELOCITIES (10^2 TO 10^5 CM-S) AT LOW TEMPERATURES.

FACILITY: PHYSICO-TECHNICAL INSTITUTE OF LOW TEMPERATURES.
FACILITY: ACADEMY OF SCIENCES OF THE UKRAINIAN SSR, KHARKOV.

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Conferences

USSR

PODCHERNYAYEVA, I. A., and FOMENKO, V. S. 

"Seventh All-Union Symposium on the Physical Properties and Electron Structure of Transition Metals, Their Alloys, and Compounds"

Kiev, Poroshkovaya Metallurgiya, No 4, Apr 70, pp 109-110

Abstract: The article discusses the reports presented at the symposium sponsored by the IPM [expansion unknown] of the Academy of Sciences UkrSSR and the Kiev Polytechnic Institute which was devoted to a discussion of theoretical and experimental studies of electron structure, various physicochemical and physicochemical properties of transition metals, their alloys and compounds with boron, carbon, nitrogen, silicon, hydrogen, and oxygen, and also of similar investigations in the area of chalcogenides of transition and rare metals.

The symposium was opened by G. V. Samsonov, Corresponding Member of the Academy of Sciences UkrSSR, who noted that, in addition to extensive experimental investigations of the physical properties of transition metals, attempts are being made to discover the nature of the formation of these properties.

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PODCHERNYAYEVA, I. A., et al., Poroshkovaya Metallurgiya, No 4, Apr 70, pp 109-110

The following reports of the plenary session provoked a great deal of interest: electron interactions in the configurational model of substance -- G. V. Samsonov, I. F. Pryadko, L. F. Pryadko; models of banded structure of the basic classes of refractory chemical compounds and alloys based on transition metals -- Ye. A. Zhurakovskiy; valence state of atoms and properties of isolated molecules of halides and chalcogenides of transition metals -- O. P. Charkin; questions of the nature and correlation of some physicochemical properties of inorganic materials -- B. N. Oshcherin; and the effect of localization of valent electrons in solids and approximate diagonalization of the energy operator in the quantum field theory of semiconductors -- A. N. Kushnirenko.

The reports presented at the three sessions of the symposium added further to the experimental data on the thermophysical, electrophysical, optical, magnetic, galvanomagnetic, physicomechanical, thermal emission, thermodynamic, and crystallochemical characteristics of transition metals, their alloys, and compounds continued the experimental investigation of electron structure using methods of soft and hard x-ray microscopy, x-ray diffraction, EPR, NMR and Mössbauer effect and furthered studies of the use of refractory compounds as cutting, abrasive, and heating materials.

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UDC 629.12:532

FOMENKO, YU. I., KONDRIKOV, L. V.

"Stabilizing Effect of a Steering Nozzle on the Pitching and Tossing of a Ship"

Tr. TsNII mor. flota (Works of the All-Union Scientific Research Institute of the Maritime Fleet), 1973, vyp. 165, pp 98-107 (from RZh--Mekhanika, No 6, Jun 73, Abstract No 6B544)

Translation: The coefficients of the rotational derivatives of C_y^α and $C_y^{\bar{\alpha}}$ required to determine the additional terms in the equations for pitching and tossing were defined experimentally in the experimental model basin of the Leningrad Shipbuilding Institute. The device simulated the displacements of the steering nozzle during pitching; oscillographic recordings of the vertical force on the steering nozzle were processed by computer. The values of the coefficients C_y^α and $C_y^{\bar{\alpha}}$ were obtained in the form of graphical relations as functions of the relative loading of the steering nozzle and the Strouhal number with respect to the propeller.

The stabilizing effect of the nozzle is defined in the first approximation on the basis of the equations of pitching and tossing in quiet water. This estimate permits establishment of the maximum effect of the nozzle in the form $1/2$

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FOMENKO, YU. I., et al., Tr. TsNII mor. flota, 1973, vyp. 165, pp 98-107

of the degree of moderation of the role during resonance. By linearizing the equations of pitching and tossing in quiet water in the usual fashion and neglecting (with respect to their smallness) the auxiliary terms from the effect of the nozzle, the authors obtained the expressions for the coefficients of resistance to roll of the stabilized ship. In the example of using the formulas obtained for a motor ship, the 50-Letiye Komsomola, the degree of moderation of pitching was 7%, and tossing, 1.4%.

The amplitude graphs of the rolling were obtained which show that the presence of the nozzle decreases the amplitudes in the resonance range by 3-5%. The results of the calculations by the formulas obtained make it possible to draw the conclusion that the stabilizing effect of the steering nozzle on the pitching and tossing of ships is inversely proportional to their displacement. Noticeable moderation of roll can occur on ships with a displacement less than 5000 tons. The bibliography has 7 entries.

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